



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,486	03/12/2001	Olli Aaltonen	944-003.069/32287	1238

4955 7590 01/05/2004

WARE FRESSOLA VAN DER SLUYS &  
ADOLPHSON, LLP  
BRADFORD GREEN BUILDING 5  
755 MAIN STREET, P O BOX 224  
MONROE, CT 06468

EXAMINER

BEHULU, ALEMAYEHU

ART UNIT	PAPER NUMBER
----------	--------------

2682

DATE MAILED: 01/05/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/804,486

Applicant(s)

AALTONEN ET AL.

Examiner

Alemayehu Behulu

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because the line above the head line (above line number 1) has to be deleted. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities: the line above line number 1 from all pages has to be deleted.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 15-19 and 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel (U.S. Patent No. 5, 884, 179) further in view of Boothroyd (U.S. Patent No.4, 581,491).

Regarding to claim 1 Patel discloses, a telecommunications network having a mobile phone, characterized in that the mobile phone that responds to a telecommunications incoming signal from a called/calling party (figure 3). However, Patel fails to disclose an audio-modulated vibrotactile module that responds to signal containing information about incoming speech, for providing an audio-modulated vibrotactile module force containing information about the incoming speech, and to vibrate a user's fingers, facial skin, wrist, cheek or other suitable location. But, Boothroyd discloses an audio-modulated vibrotactile module that responds to

signal containing information about incoming speech (figure 1, number 14 and figure 2), for providing an audio-modulated vibrotactile module force containing information about the incoming speech, and to vibrate a user's fingers, facial skin, wrist, cheek or other suitable location (figure 1, number 20 and column 2, lines 43-column 3, lines 2). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Patel (U.S. Patent No. 5, 884, 179) with Boothroyd (U.S. Patent No.4, 581,491) in order to accommodate people with hearing problem (as suggested by Boothroyd).

Regarding to claim 2, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1, characterized in that the telecommunications signal from a called/calling party (see Patel figure 3), the audio-modulated vibrotactile module comprises an audio-to-vibrotactile converter signal, for providing an audio-to-vibrotactile converter signal containing information about a vibration modulation of the incoming speech (see Boothroyd figure 1, numbers 10, 12, 14, 16, 24, and 26).

Regarding to claims 3 and 5, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 2, characterized in that the audio-modulated vibrotactile module comprises a vibrotactile actuator (see Boothroyd figure 1, number 18) that responds to the audio-to-vibrotactile converter signal, for providing the audio-modulated vibrotactile module force in the form of vibrotactile actuator force (see Boothroyd figure 1, number 18, 20 and 22 and column 7, lines 7-20).

Regarding to claim 4, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1, characterized in that the telecommunications system incoming audio signal from the called/calling party (see Patel figure 3), an audio-to-vibrotactile converter

Art Unit: 2682

that responds to and incoming audio signal containing the incoming speech (see Boothroyd figure 1, numbers 14 and 24), and for providing an audio-to-vibrotactile converter signal containing information about a vibration modulation of the incoming speech (figure 1, numbers 18, 20 and 22 and column 2, lines 19-25).

Regarding to claim 6, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1, characterized in that the audio-to-vibrotactile converter includes a hardware-based signal processor for performing a vibration modulation (see Boothroyd column 5, lines 26-column 6 lines 17 and figure 2 and 3).

Regarding to claims 7 and 28, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 6, characterized in that the vibration modulation includes frequency domain filtering or equalization (see Boothroyd figure 2, number 34, 38, 42 and 50 and figure 4).

Regarding to claims 8 and 29, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 6, characterized in that the vibration modulation includes linear/non- linear amplification (see Boothroyd figure 2, number 30).

Regarding to claims 9 and 30, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 6, characterized in that the vibration modulation includes mixing speech signals with other signals (see Boothroyd figure 2, number 30).

Regarding to claims 15 and 32, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1, characterized in that the vibrotactile actuator is and electromechanical actuator (see Boothroyd column 7, lines 7-20).

Art Unit: 2682

Regarding to claims 16-19 the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1, characterized in that the mobile phone (see Patel figure 3, number 10a and 10b) and vibrotactile actuator which is suitably arranged in a housing for providing vibration (see Boothroyd column 3, lines 26-61). Regarding to the claimed limitation that the vibrotactile actuator providing vibration on the user's fingers, wrist, facial skin and cheek, Boothroyd discloses that vibrotactile actuator can be worn as user's convenience (see Boothroyd column 3, lines 26-61). Therefore, at the time of the invention it would have been obvious to a person of an ordinary skill in the art to modify Boothroyd (U.S. Patent No.4, 581,491) that the vibrotactile actuator can be placed on the user's fingers, wrist, facial skin or cheek in order for the device not to interfere with the user's daily activities as suggested by Boothroyd.

Regarding to claim 25, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 4 that the telecommunications network (see Patel figure 3) uses and F0-format for speech encoding to assist in interpreting incoming speech in noisy environment (see Boothroyd column 2, lines 43-column 3, lines 2).

Regarding to claim 26, first of all the rejection to claim 1 above is herein incorporated by reference. The combination of Patel and Boothroyd disclose a mobile phone that a telecommunications signal containing information about incoming speech from a called/calling party (see Patel figure 3) an audio-modulated vibrotactile module that responds to incoming speech for providing an audio-modulated vibrotactile module force containing information about the incoming speech from to vibrate a user's fingers, facial skin, wrist, cheek or other suitable location (see Boothroyd figure 1, number 20 and column 2, lines 43-column 3, lines 2), the

Art Unit: 2682

audio-to-vibrotactile converter that responds (see Boothroyd figure 1, numbers 14 and 24), that the audio-modulated vibrotactile module having an audio-to-vibrotactile converter signal (see Boothroyd figure 1, numbers 14 and 24), for providing an audio-to-vibrotactile converter signal containing information about a vibration modulation of the incoming speech (see Boothroyd figure 1, numbers 18, 20 and 22 and column 2, lines 43-column 3, lines 2), and the audio-modulated vibrotactile module also having a vibrotactile actuator (see Boothroyd figure 1, number 18 and 22) that responds to the audio-to-vibrotactile converter signal, for providing the audio-modulated vibrotactile module force in the form of vibrotactile actuator force (see Boothroyd figure 1, number 20 and column 7, lines 7-20).

Regarding to claim 27, first of all the rejection to claim 1 above is herein incorporated by reference. The combination of Patel and Boothroyd disclose a method comprising the steps of telecommunications signal containing incoming speech from a called/calling party (see Patel figure 3), converting a signal containing information about the incoming speech (Boothroyd figure 1, number 14 and figure 2) into an audio-to-vibrotactile converter signal containing information about vibration modulation of the incoming speech, and transforming the audio-to-vibrotactile converter signal into an audio-modulated vibrotactile module force containing information about incoming speech to vibrate a user's fingers, facial skin, wrist, cheek or other suitable location (see Boothroyd figure 1, number 18, 20 and 22 and column 2, lines 43-column 3, lines 2).

Regarding to claim 31, a method according to claim 27, characterized in that the step of converting includes performing vibration modulation using a speech encoding algorithm (see Boothroyd column 2, lines 43-55).

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel (U.S. Patent No. 5, 884, 179) and Boothroyd (U.S. Patent No.4, 581,491) further in view of Seth-Smith (U.S. Patent No. 4, 829, 569).

Regarding to claim 21, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 3, a telecommunications network (see Patel figure 3). However, Patel and Boothroyd fail to disclose a separately-priced vibrotactile service. But, Seth-Smith discloses separate billing system for hearing-impaired person as well (column 14, lines 47-60, column 22, lines 9-22, and column 23, lines 41-54). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Patel (U.S. Patent No. 5, 884, 179) and Boothroyd (U.S. Patent No.4, 581,491) with Seth-Smith (U.S. Patent No. 4, 829, 569) in order to provide an additional communications facility not previously made available (as suggested by Seth-Smith).

5. Claims 10 – 14 and 20, 22, 23 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel (U.S. Patent No. 5, 884, 179) and Boothroyd (U.S. Patent No.4, 581,491) further in view of John (U.S. Patent No. 6, 602, 202).

Regarding to claim 10, the combination of Patel and Boothroyd disclose a telecommunications network according to claim 1. However, Patel and Boothroyd fail to disclose that the audio-to-vibrotactile converter includes a software-based signal processor for performing vibration modulation. But, John discloses the audio-to-vibrotactile converter includes a software-based



Art Unit: 2682

signal processor for performing vibration modulation (figure 1b, number 40). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Patel (U.S. Patent No. 5, 884, 179) and Boothroyd (U.S. Patent No.4, 581,491) with John (U.S. Patent No. 6, 219, 635) in order to have accurate and controllable indication.

Regarding to claim 11, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 10 (see Patel figure 3) that the vibration modulation includes using a speech encoding algorithm (see Boothroyd column 2, lines 43-55).

Regarding to claim 12, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 10 (see Patel figure 3) that the software-based signal processor responds to users adjustable vibration defining parameters (see John column 12, lines 16-column 14, lines 16).

Regarding to claim 13, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 10 (see Patel figure 3) that the user adjustable vibration defining parameters include direct numerical parameters (see John column 12, lines 16-column 14, lines 16).

Regarding to claim 14, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 10 (see Patel figure 3) that the user adjustable vibration defining parameters include a pre-set list of parameters (see John column 12, lines 16-column 14, lines 16).

Regarding to claim 20, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 1(see Patel figure 3) that the vibrotactile

actuator (see Boothroyd figure 1, number 18) is an acoustic actuator (see John figure 1b, number 26).

Regarding to claim 22, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 3 (see Patel figure 3) that the audio to vibrotactile converter (see Boothroyd figure 1) includes a personalized hearing parameters module adjusting speech processing so a user can have personalized hearing parameters (see John column 12, lines 16-column 14, lines 16).

Regarding to claim 23, the combination of Patel, Boothroyd and John disclose a telecommunications network according to claim 3 (see Patel figure 3) that the personalized hearing parameters can either be selected by a trial-and-error basis, preset values or personalized values given by a user's physician (see John column 12, lines 16-column 14, lines 16 and column 25, lines 12-column 26 lines 9).

Regarding to claim 33, the combination of Patel, Boothroyd and John disclose a method according to claim 26, that the step of transforming includes acoustically actuating (see John figure 1b, number 26) the audio-modulated vibrotactile module force (see Boothroyd figure 1, number 18).

Art Unit: 2682

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alemayehu Behulu whose telephone number is 703-305-4828. The examiner can normally be reached on 8 AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-746-3501.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

AB

*Nguyen VO*  
12-29-2003

NGUYEN T. VO  
PRIMARY EXAMINER